

invention. Specifically, the Examiner asserts that the mixture of different water insoluble (i) inorganic oxides of the elements aluminium or silicium, (ii) oxides/hydroxides of the element aluminium or (iii) aluminium silicates, is unclear. The Examiner therefore requests clarification. The Examiner also asserts that the phrase "atomic number of 57-57" in claim 17 is indefinite and therefore requests clarification.

Claims 1-4, 9-16 and 18 are rejected as anticipated under 35 USC 102(e) by U.S. Patent No. 6,183,851 to Mishima. Claims 1,3,10,15,16 and 18 are rejected as anticipated under 35 USC 102(e) by U.S. Patent 6,383,611 to Kohno et al. or under 35 USC 102(b) by U.S. Patent 5,856,001 to Okumura et al. Claims 1,3,10,12 and 18 stand rejected as anticipated under 35 USC 102(e) by U.S. Patent No. 6,129,785 to Schliesman et al. Applicants respectfully disagree.

Applicants have amended claim 1 to recite that the mixture contains primary particles, and that the primary particles of the mixture component with the largest volume have an equivalent sphere diameter of less than 20 nm; and the primary particles of the mixture component with the smallest volume have an equivalent sphere diameter that is at least  $1/20$  of the equivalent sphere diameter of the primary particles of the mixture component with the largest volume. Support for this amendment can be found in the specification at page 5, lines 6-20. Accordingly, no new matter has been added by this amendment.

Claim 2 has been cancelled. Applicants have also added three (3) new dependant claims 20-22. These claims recite, respectively, that the aluminium oxide/hydroxide of claim 9, 10 and 12, contains one or more of the elements with atomic number 57 to 71 in a total amount of 0.04 to 4.2 mole percent relative to  $Al_2O_3$ . Support for these claims can be found in the specification at page 5, lines 31-37. No new matter has been added by this amendment.

Claim 13 has been amended to correct a typographical error. No new matter has been added.

Although three (3) claims have been added, one claim has been withdrawn, one claim has been cancelled, and there were originally 19 claims filed, leaving a current total of 20 claims. Therefore, no fee is believed to be due.

#### **INDEFINITENESS REJECTIONS**

The Examiner has rejected claims 1-18 under 35 USC 112, second paragraph. More specifically, the Examiner states that it is not clear if the mixture recited in claim 1 is a mixture of (i) and (ii), (i) and (iii), (ii) and (iii), (i) and (i), (ii) and (ii), (i) and solvent, (ii) and solvent and (iii) and solvent. The Examiner requests clarification.

It is respectfully submitted that claim 1 is not indefinite. The claim requires that the mixture be of different water insoluble

- (i) inorganic oxides of the elements aluminium and silicium
- (ii) oxides/hydroxides of the element aluminium or
- (iii) aluminium silicates

Claim 1 in no way limits the combinations, rather, claim 1 only requires that the combination or mixture be of at least two different compounds of the categories listed in (i), (ii) and (iii). For example, the combination may be comprised of (i) and (i), such as in claims 11 and 13; (i) and (ii), such as in claims 9, 10, and 12; (i) and (iii), such as in claims 14 and 15; and (ii) and (iii) such as in claim 16. Claim 1 includes various other combinations of the compounds of the type listed in (i), (ii) and (iii) and is in no way limited by the dependent claims.

The Examiner has also rejected claim 17 because the phrase "atomic number 57-57 is indefinite." Applicants filed a Supplemental Amendment on October 31, 2002 which amended claim 17

to recite elements with atomic number 57 to 71." Applicants submit herewith a copy of the Supplemental Amendment and the stamped returned postcard from the Patent Office.

Accordingly, Applicants respectfully request that each of the Examiner's indefiniteness rejections be withdrawn.

#### **ANTICIPATION REJECTIONS**

Claims 1-4, 9-16 and 18 are rejected as anticipated under 35 USC 102(e) by U.S. Patent No. 6,183,851 to Mishima. Claims 1,3,10,15,16 and 18 are rejected as anticipated under 35 USC 102(e) by U.S. Patent 6,383,611 to Kohno et al. or under 35 USC 102(b) by U.S. Patent 5,856,001 to Okumura et al. Claims 1,3,10,12 and 18 stand rejected as anticipated under 35 USC 102(e) by U.S. Patent No. 6,129,785 to Schliesman et al.

#### **Mishima**

Claims 1-4, 9-16 and 18 are rejected as anticipated under 35 USC 102(e) by U.S. Patent No. 6,183,851 to Mishima. Applicants respectfully disagree.

It is axiomatic that "[f]or a prior art reference to anticipate in terms of 35 USC § 102, every element of the claimed invention must be identically shown in a single reference." In *re Bond*, 910 F.2d 831, 832, 15 USPQ 1566, 1567 (Fed. Cir. 1990).

As described above, the present invention is directed to a recording sheet for ink jet printing comprised of a support coated with at least one ink receiving layer. The ink receiving layer is comprised of one or more binders and a mixture of different water insoluble (i) inorganic oxides of the element aluminium or silicium, (ii) oxides/hydroxides of the element aluminum or (iii) aluminum silicates, wherein at least one of the components of the mixture has at least a certain pore volume and is present in at least a certain weight percent of the total

mixture.

As recited in amended claim 1, the primary particles of the mixture component with the largest volume have an equivalent sphere diameter of less than 20 nm and the primary particles of the mixture component with the smallest volume have an equivalent sphere diameter that is at least 1/20 of the equivalent sphere diameter of the primary particles of the mixture component with the largest volume.

Mishima '851 discloses an image recording medium comprising a coating layer or layers on a support. At least one of the coating layers is comprised of a dye-receptive polymer of a particular structure and one or more inorganic pigments. The patent indicates that the combination of both components enhances the ink absorption rate and the dye receptivity, and that this cannot be expected with the single use of the components. Nowhere in Mishima '851 is the relationship between the equivalent sphere diameter of the primary particles having the largest volume and the primary particles having the smallest volume disclosed, i.e. Mishima does not state that the equivalent sphere diameter of the primary particles with the smallest volume must be at least 1/20 of that of the primary particles of the largest volume.

Moreover, Mishima does not disclose that the primary particles with the largest volume have an equivalent sphere diameter of less than 20nm. In fact, Mishima notes that the average particle diameter of silica and alumina is in the range of 4 to 120 nm and 4 to 300 nm, respectively. The higher end of these ranges, i.e., 120nm and 300 nm, is well above the "less than 20nm" recited in the claims of the present invention.

2. Additionally, Applicants respectfully point out that it is believed that Examiner's calculation is not accurate. [ If the primary particles with the largest volume have an equivalent sphere diameter of less than 20 nm, then the equivalent sphere diameter of the particles of the smallest volume will be anywhere

from 1nm to less than 20nm (claim 1 indicates that the primary particles with the smallest volume are at least 1/20 of the primary particle with the largest volume). In Mishima, the silica (the component of the mixture with the smaller volume) has an average particle diameter of 4nm to 120 nm. A spherical diameter of 4nm is above the 1nm of claim 1 of the present invention.

*I do not see this in the claim  
inventor states less than 20nm  
and 4 is less than 20*

Similarly, with respect to claim 4, if the primary particles with the largest volume have an equivalent sphere diameter of less than 15 nm, then the equivalent sphere diameter of the particles with the smallest volume will be anywhere from 1.5 nm to less than 15nm (claim 4 indicates that the primary particles with the smallest volume are at least 1/10 of the primary particles with the largest volume). As stated above, in Mishima, the silica (the component of the mixture with the smaller volume) has an average particle diameter of 4nm to 120 nm. A spherical diameter of 4nm is above the 1.5 nm of claim 4 of the present invention.

*inventor states less than 15 nm and  
4 is less than 15 nm*

Since Mishima does not contain every element of the present invention, it is not anticipatory of the claims. Accordingly, Applicants respectfully request that the Examiner's anticipation rejection be withdrawn.

**Kohno et al.; Schliesman et al.; and Okumura et al.**

Claims 1,3,10,15,16 and 18 are rejected as anticipated under 35 USC 102(e) by U.S. Patent 6,383,611 to Kohno et al. or under 35 USC 102(b) U.S. Patent 5,856,001 to Okumura et al. Claims 1,3,10,12 and 18 stand rejected as anticipated under 35 USC 102(e) by U.S. Patent No. 6,129,785 to Schliesman et al. Applicants respectfully disagree.

All of these references are directed to ink jet recording mediums. None of the references disclose the size of, or,

relationship between, the equivalent sphere diameters of the primary particles with the largest and smallest volumes, as in the present invention.

Since these references do not contain every element of the present invention, they are not anticipatory of the claims. Accordingly, Applicants respectfully request that each of the Examiner's anticipation rejections based on these references be withdrawn.

In view of the above arguments, the indefiniteness and anticipation rejections have been overcome. Applicants submit that this application is now in condition for allowance. Reconsideration of this application and allowance of pending claims 1-18, and new claims 20-22 are hereby requested.

Respectfully submitted,

ONOFRIO LAW

Attorneys for Applicants, Reg 36,146

*Lori S. Rowan for*

By: *Dara L. Onofrio*

Dara L. Onofrio

Reg. No. 34,889

1133 Broadway - Suite 1600

New York, NY 10010

(212) 871-6112 (phone)

(212) 871-6113 (fax)

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the:

Commissioner for Patents,  
Washington, D.C. 20231.

Dated: March 31, 2003

Lori S. Rowan

Person mailing paper

*Lori S. Rowan*

Signature of person mailing paper